Environmental Programs: Quarterly Update

Hazardous Materials Removal – Protecting the Environment

Many WSDOT construction projects are located in areas where soil and groundwater has been contaminated from land uses such as gas stations or factories. Contaminants in these soils may include petroleum products, industrial chemicals, and metals such as lead and arsenic. These soils require special consideration for removal and disposal. In addition WSDOT routinely removes asbestos and lead based paints in building materials prior to demolition of acquired properties. The handling and disposing of contaminated soil and other materials must comply with stringent state and federal regulations.

Recorded Soil Removal Amounts

Every year, WSDOT construction projects remove many tons of contaminated soil and replace it with clean soil. Over the past five years, nearly 8,000 tons of contaminated soils were removed and disposed of during the course of 23 WSDOT construction projects. This is roughly equivalent to 500 standard dump truck loads. Not included in this figure is the amount of contaminated soil removed from two of the largest projects – the Hood Canal Bridge Replacement and new Tacoma Narrows Bridge, where nearly 36,000 tons (over 2000 dump truck loads) of soils contaminated with lead and arsenic were removed in the last two years alone. Once removed, contaminated soils must be disposed at licensed landfills that can accept the soil based on the type and level of contamination.

Contaminated soil excavation at the new Tacoma Narrows Bridge project. At this project and the Hood Canal Bridge site, WSDOT has removed nearly 36,000 tons of contaminated soils.

Controlling Clean-up Costs

WSDOT tries to investigate potentially contaminated properties prior to acquisition to minimize expense by assuring that appropriate removal plans are in place. This is accomplished in part by conducting the following hazardous material investigations:

Site Reconnaissance: physical observation of a property and its structures to identify recognized environmental conditions.

Initial Site Assessment: analysis of land use history that determines whether sampling (Preliminary Site Investigation) should be performed.

Preliminary Site Investigation: sampling of soil/water/sediments to determine the nature and extent of contamination.

Discipline Studies: provides supporting information to environmental documentation such as comparisons of long and short term effects to projects and mitigation measures of those effects.

Depending on the results of the investigation WSDOT may sometimes avoid acquiring contaminated property by re-designing a project to avoid the property. Sometimes contaminated property cannot be avoided and WSDOT takes on the responsibility for the cleanup of the property. In other cases, WSDOT can utilize several strategies during property acquisition to sizably reduce, recover, or eliminate cleanup costs entirely.

Purchasing Strategy Minimizes Cleanup Liability

WSDOT typically uses the "Property Purchased Clean" real estate acquisition method when hazardous materials are known to exist on a property. This method requires owners to clean up the property prior to receiving final payment (funds are placed in escrow). The I-5 Bridgeport Way Interchange project is a recent example where acquisitions were made using this method.

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WSDOT Finds Solution for Chronic Riverbank Erosion

Case Study: The Hoh River on U.S. 101

The Northwest coast along U.S. 101 is known for its scenic beauty, but it also serves as a critical economic lifeline to the communities located in the most Northwestern part of the state. For over 20 years these communities and WSDOT have struggled with the Hoh River eroding portions of U.S. 101. The worst erosion site is located about 15 miles south of the town of Forks, on the east bank of the river.

Repeated attempts to stabilize the site under emergency conditions have failed to provide a long-term solution. This alarming trend has resulted in the site being identified as a top priority under WSDOT's Chronic Environmental Deficiencies Program (CEDP). The purpose of the program is to develop permanent solutions to repetitive erosion repair sites that compromise the integrity of the roadway and harm aquatic habitat.

Under the CEDP, a reach analysis was conducted for this site as well as five other repetitive erosion sites within the Hoh watershed where portions of U.S. 101 lie within the erosion hazard zone. The analysis determined that the erosion site at milepost 174 was the location at the greatest risk. A conceptual design, fundamentally different from previous bank protection strategies attempted at the site, was developed from the analysis. Instead of relying on rock to armor and deflect heavy flows away from the bank (a previous strategy), a series of ten engineered logjams was proposed, to split the flow of the river, diffuse higher energy flows while also deflecting erosive flows away from the bank. The engineered logjams reduce environmental mitigation costs, and provide fish habitat enhancements. Major flooding in October 2003 caused further damage at the site and opened up a funding opportunity using Federal disaster recovery funds.

To take advantage of the relatively small window of opportunity to construct this project prior to the next flood event, a high level of collaboration between WSDOT staff, consultants, contractors, and regulatory agencies was needed. Construction on this project began during the summer of 2004 and was completed within a few short months. This is one of the largest engineered logjam projects ever undertaken by WSDOT for infrastructure protection purposes.

Project Costs

Over the last 20 years WSDOT has spent approximately $2.2 million for repair work at this site.

One alternative considered was to realign U.S. 101. Estimated project costs were $10.0 million and did not include mitigation costs for major environmental impacts.

Total project costs were approximately $7 million. Eighty-seven percent of the project costs were paid by the Federal Highway Administration.

Before Construction - Flooding at the Hoh River erodes the shoulder of U.S. 101

July 2004 - Beginning of Construction

August 30, 2004 - Logjam construction progress

September 28, 2004 - Hoh River After Construction